



Alison M. Shaw

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Academic History:

2005 - present **Woods Hole Oceanographic Institution**, Woods Hole, MA
Assistant Scientist in Geology and Geophysics
2003 - 2005 **Carnegie Institution of Washington**, Washington, DC
Margins post-doctoral Fellow
1997 - 2003 **Scripps Institution of Oceanography**, La Jolla, CA
Ph.D. in Earth Sciences/Oceanography
1992 - 1996 **McGill University**, Montreal, Canada
B.Sc. (Hons.) in Environmental Geosciences

Research interests:

- Arc settings – evaluating volatile budgets and estimating absolute fluxes of various volatile species (Central America, the Northern Mariana Islands and the Izu Islands)
- Back-arc basins – assessing the relative contributions of slab, crust, hotspot and upper mantle components to the magma source (Manus Basin, Mariana Trough)
- Submarine volcanic systems – using hydrothermal fluids and basaltic glasses to understand the degassing process and determine the provenance of different magmas (Manus Basin, Reykjanes Ridge, Pitcairn seamounts, Loihi Seamount, Alarcon Basin, Mariana cross-chain seamounts)
- Volatile fluxes – estimating volcanic emissions using remote sensing and geochemical techniques
- Magmatic degassing – evaluating the effects of composition, water content and eruption depth

Previous research experience and field-based studies:

10/05 **Southern Seamount Province of the Mariana arc:** Sea-based expedition in collaboration with JAMSTEC, U. of Texas at Dallas, Caltech, and NOAA. Collection of rock and fluid samples using JAMSTEC's remotely operated vehicle.

2003 - 2005 **Northern Mariana and Izu Islands:** Margins-funded studies of volatile fluxes in collaboration with SIO, UNM, Boston University, the University of Tokyo and the Geological Survey of Japan. Gas sampling, remote sensing and volcanic tephra sampling for melt inclusion studies - <http://scripps.ucsd.edu/japan> and <http://sio.ucsd.edu/marianas>

03/03 **Guatemala, Nicaragua and Costa Rica:** Measurement of gas fluxes from active volcanoes using remote sensing techniques (COSPEC)

01/02 **Nicaragua:** Collection of volatiles from fumaroles, hot springs, geothermal wells and thermal waters in volcanically active regions of Nicaragua

01/01 **Costa Rica:** Field expedition to Costa Rican volcanoes. Volatile studies of active volcanoes along the Costa Rica segment of the arc see www.sio.ucsd.edu/volcano

10/98 - 11/98 **Alarcon Rise, Gulf of California:** SIO cruise to the Gulf of California - dredging of basaltic glass from the Alarcon Rise - a young spreading centre

10/98 **Loihi Seamount, Hawaii** Collection of hydrothermal vent fluids to look at the temporal variation of CO₂/³He ratios in collaboration with the University of Hawaii

12/97 - 01/98 **Middle America Trench** Seafloor mapping of oceanic crust adjacent to the Middle America trench using multi-beam sonar to investigate outer rise faulting

Synergistic Activities:

- Reviewer for NSF, JGR, GCA, Island Arc and G-cubed
- Invited speaker at Goldschmidt 2005
- DTM Geochemistry seminar organizer
- Special session chair at Spring AGU, 2006
- Development and participation in web-based field expeditions to Costa Rica (2001), the Mariana Islands (2004) and the Izu Islands (2005)

Publications:

- E.H. Hauri, **A.M. Shaw**, J. Wang, J.E Dixon, P.L. King, and C.W. Mandeville, Matrix effects in hydrogen isotope analysis of silicate glasses by SIMS, *Chem. Geol.*, *in press*
- A.M. Shaw**, D.R. Hilton, Helium isotope variations in mineral separates from Costa Rica and Nicaragua: Assessing crustal contributions, time-scale variations and diffusion-related mechanisms, *Chem. Geol.*, 230 (2006) 124-139
- A.M. Shaw**, D.R. Hilton, C.G. Macpherson, and J.M. Sinton, The C-He-Ar systematics of lavas from the Manus back-arc basin: resolving degassing and contamination *Geochim. Cosmochim. Acta* 68 (2004) 1837-1856.
- A.M. Shaw**, D.R. Hilton, T.P. Fischer, M.M. Zimmer, G. Alvarado, Helium and carbon relationships in geothermal fluids from the Central American arc in Costa Rica *Earth Planet. Sci. Lett.* 214 (2003) 499-513.
- T.P. Fischer, D.R. Hilton, M.M. Zimmer, **A.M. Shaw**, Z.D. Sharp, and J. Walker, Subduction and recycling of nitrogen along the Central American Margin, *Science* 297 (2002) 1154-1157.
- A.M. Shaw**, D.R. Hilton, C.G. Macpherson, and J.M. Sinton, Nucleogenic neon in high $^3\text{He}/^4\text{He}$ lavas from the Manus back-arc basin: a new perspective on He-Ne decoupling, *Earth Planet. Sci. Lett.* 194 (2001) 53-66.

Other publications including those in review and in preparation:

- P.R. Castillo, J.W. Hawkins, P.F. Lonsdale, D.R. Hilton, **A.M. Shaw**, and M. Glascock Petrology of Alarcon Basin lavas, Gulf of California: Nascent intracontinental ocean crust, *J. Geophys. Res.* 107 (2002) B10, 2222.
- T.P. Fischer, **A.M. Shaw** and D.R. Hilton, Gas geochemistry of volcanic and hydrothermal fluids of Central America. In: G. Alvarado (Editor), Central America: Geology, Resources and Hazards, *in press* (2006)
- A.M. Shaw**, E.H. Hauri, K. Kelley, T.P. Fischer, D.R. Hilton and T. Plank, The hydrogen isotopic composition of subduction zone water, *in prep.*
- A.M. Shaw**, E.H. Hauri, T.P. Fischer, D.R. Hilton, R. Stern and T. Plank, Mariana arc fluid budgets: new insights from melt inclusions, *in prep.*
- Ray, M.C, Hilton, D.R., Munoz, J., Fischer, T.P. and **A.M. Shaw** Assessing the effects of degassing and crustal contamination on the helium and carbon chemistry of hydrothermal fluids: insights from the Southern Volcanic Zone of Chile, *submitted.*

Recent collaborators: Tobias Fischer (U. of New Mexico), Terry Plank (Boston University), Robert Stern (U. of Texas at Dallas), Colin Macpherson (Durham University), John Sinton (U. of Hawaii), Katie Kelley (U. of Rhode Island) James Walker (Illinois) and Dr. Yoshihiko Tamura (JAMSTEC).

Doctoral Advisor: Dr. David Hilton, Scripps Institution of Oceanography

Post-doctoral Advisor: Dr. Erik Hauri, Carnegie Institution of Washington (DTM)